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THE METEOROLOGY OF CLIFTON

W. C. BURDER, F.R.A.S.

G. A.
Gloucestershire
8° 2

George Reed
Gloucestershire

f. 2

THE

METEOROLOGY

OF

CLIFTON,

BEING THE

RESULTS OF TEN YEARS' OBSERVATIONS OF THE BAROMETER, THERMOMETER, RAIN, &c. &c.,

RECORDED AT

No. 7, SOUTH PARADE, CLIFTON, BRISTOL,

BY

WILLIAM C. BURDER,

F.R.A.S.,

Member of the Council of the British Meteorological Society.

1863.

Bristol:

PUBLISHED BY THE AUTHOR,

No. 7, SOUTH PARADE, CLIFTON.

BIBLIOTHECA·BODLEIANA·

THE

METEOROLOGY OF CLIFTON.

LATITUDE, 51° 27′ 47″. LONGITUDE, 2° 36′ 30″.

The Science of Meteorology may well be said to be in its infancy. It is much to be regretted that, owing to the want of accurate instruments, the labours of many zealous workers in years past have been completely thrown away. Indeed, much of what has been done has been productive of harm rather than good, as far as the advancement of the Science is concerned. The last twenty years have witnessed a wonderful change in this respect, and, owing to the energy of some of our scientific men, accurate instruments are now pretty generally scattered over our island, and those who take an interest in this subject are now generally aware that, in order to make observations in Meteorology, such as shall conduce to the real advancement of the Science, certain conditions are necessary to be observed in regard to the choice of instruments, their position, and the times of reading, &c., &c.

The formation of the "British Meteorological Society" has had a great deal to do with the bringing about of this improvement, and there is every reason to hope that the next twenty years, say, will see a mass of trustworthy observations made in a great number of different parts of the country, capable, when discussed, of yielding most important results.

It seems to us obvious that in the present state of the Science, a work on the Meteorology of a particular spot should be little more than a collection of Tables. With this view, the following work is offered to the public. Ten years, although not a sufficiently long term to ensure mean results of perfect accuracy, may, notwithstanding, be regarded as a useful period for making up averages, and our own experience proves that a very considerable approximation to the truth may be so obtained, such as in regard to the mean temperature, &c., of the place. This will be seen best by laying down the mean results on squared paper, when, on drawing a line through the points representing the different temperatures of the Months, a curve of very considerable regularity is obtained.

In regard to the locality where the observations here recorded have been made, it should be stated that care has been taken that the Thermometers should be placed away from the influence of houses, &c., so as to enable the observer to obtain the true temperature of the air. Owing to the want of precaution in this respect, a vast number of observations in many places have been thrown away, and results otherwise trustworthy have been rendered useless. In order to obtain a fair comparison of the temperature, &c., of one place with another, too much stress cannot be laid on the placing of the instruments as nearly as possible under similar conditions.

Our own locality represents a very fair average, being tolerably open, and nearly on the same level as the principal part of Clifton. The fact of its being at the Eastern extremity

of Clifton makes no sort of difference in this respect. In order to prove this (which from theory we felt certain of) the writer has made experiments and comparisons from time to time, the result of which proves what is stated above. It needs hardly to be stated that those parts of Clifton where there is a decided incline in the ground towards the South, are somewhat warmer than our own. A similar result is true in all hilly places, and where the ground rises precipitously, as at Torquay, the climate in those parts which face the South must of necessity be milder than the average temperature of the air in the neighbourhood. The latter has been the object sought to be obtained in regard to the observations which form the present work.

MEAN TEMPERATURE OF THE AIR.

TABLE I.—This Table shows the Mean Temperature of the Air, approximately, for each Month of the series of Ten Years ending December, 1862. The observations upon which the results are founded, are four daily readings of the thermometer, two of which are actual readings at the hours of observation, and two are the readings of self-registering thermometers, maximum and minimum.

The morning readings have been taken, with very few exceptions, at 9 a.m., *local* time (which is uniformly observed in reference to the readings, the results of which are given in this work), and the afternoon observations have been taken at different hours from 3 to 6 p.m., according to the convenience of the observer; but for each Month one uniform hour has been adhered to, and the alteration of hours has usually referred to groups of Months and not to individual ones. The results of both a.m. and p.m. readings, as also of the readings of the maximum and minimum thermometers have been corrected for diurnal range by Glaisher's Tables.

The usually close agreement between the two independent results is very satisfactory, as showing that the observations have been carefully made, and also that the Diurnal Range Tables, founded on results of observations at Greenwich, are applicable to Clifton. It is rather probable that the mean of a large number of observations may prove that the Diurnal Curve at Clifton, may require a slight alteration from that adapted to Greenwich, but the similarity between the climates of the two places is sufficiently evident to prove that the results would scarcely be altered to the extent of one degree, even if the observations at Clifton were numerous enough to enable us to draw our own local curve with the same precision as that with which Mr. Glaisher has drawn the Greenwich one.

TABLE I.

Showing the Mean Temperature of the Air at 4 feet above the Ground, during each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
1853	41·6	33·4	38·0	45·3	51·2	55·8	57·8	57·7	54·3	49·9	41·2	35·0	46·8
1854	39·0	40·0	43·2	48·6	49·6	54·0	59·0	59·1	58·1	49·0	41·0	42·3	48·6
1855	36·2	29·3	37·9	44·5	48·2	55·1	62·0	60·5	55·8	50·0	41·1	37·6	46·5
1856	40·0	41·7	39·6	46·0	48·3	56·2	60·0	61·8	54·0	51·0	41·9	41·5	48·5
1857	37·3	39·5	41·3	45·0	51·9	60·7	61·1	63·2	58·4	52·4	44·9	46·7	50·2
1858	38·5	36·0	41·2	46·9	51·3	61·5	58·6	60·7	59·0	49·9	39·6	42·5	48·8
1859	41·3	42·9	45·5	45·5	53·0	59·0	66·0	61·7	55·3	50·4	42·3	35·8	49·9
1860	39·9	36·1	40·8	42·5	53·4	53·0	58·1	56·9	52·1	50·5	40·5	36·0	46·6
1861	35·0	41·6	43·2	45·9	51·5	58·4	58·7	60·7	55·6	54·0	40·5	40·2	48·8
1862	39·9	41·1	42·5	47·7	54·0	54·9	57·0	58·6	56·3	51·2	38·5	44·6	48·9

In the above Table, it will be seen that the Warmest Month was July, 1859 (66·0), *and the Coldest February,* 1855 (29·3) *giving a range in Mean Monthly Temperatures of* 36·7 *degrees.*

TABLE II.

Showing the Departure of the Mean Temperature of each Month of the Ten Years ending December, 1862, from the average.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	+2·7	—4·8	—3·3	—0·5	0·0	—1·1	—2·0	—2·4	—1·6	—0·9	+0·1	—5·2
1854	+0·1	+1·8	+1·9	+2·8	—1·6	—2·9	—0·8	—1·0	+2·2	—1·8	—0·1	+2·1
1855	—2·7	—8·9	—3·4	—1·3	—3·0	—1·8	+2·2	+0·4	—0·1	—0·8	0·0	—2·6
1856	+1·1	+3·5	—1·7	+0·2	—2·9	—0·7	+0·2	+1·7	—1·9	+0·2	+0·8	+1·3
1857	—1·6	+1·3	0·0	—0·8	+0·7	+3·8	+1·3	+3·1	+2·5	+1·6	+3·8	+6·5
1858	—0·4	—2·2	—0·1	+1·1	+0·1	+4·6	—1·2	+0·6	+3·1	—0·9	—1·5	+2·3
1859	+2·4	+4·7	+4·2	—0·3	+1·8	+2·1	+6·2	+1·6	—0·6	—0·4	+1·2	—4·4
1860	+1·0	—2·1	—0·5	—3·3	+2·2	—3·9	—1·7	—3·2	—3·8	—0·3	—0·6	—4·2
1861	—3·9	+3·4	+1·9	+0·1	+0·3	+1·5	—1·1	+0·6	—0·3	+3·2	—0·6	0·0
1862	+1·0	+2·9	+1·2	+1·9	+2·8	—2·0	—2·8	—1·5	+0·4	+0·4	—2·6	+4·4

TABLE III.

Mean Temperature of the Years 1853 to 1862.

	1853	1854	1855	1856	1857	1858	1859	1860	1861	1862
Departure from Mean of 10 years	46·8	48·6	46·5	48·5	50·2	48·8	49·9	46·6	48·8	48·9
	—1·6	+0·2	—1·9	+0·1	+1·8	+0·4	+1·5	—1·8	+0·4	+0·5

Mean Temperature of the Ten Years 1853 *to* 1862, 48·4.

Mean Temperature of the Months for the Ten Years 1853 to 1862.

January	February	March	April	May	June	July	August	September	October	November	December
38·9	38·2	41·3	45·8	51·2	56·9	59·8	60·1	55·9	50·8	41·1	40·2

TABLE IV.

Showing the Maximum Temperature of the Air for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	53·7	45·4	57·7	60·9	74·2	74·4	76·5	73·3	68·9	62·5	56·5	51·3
1854	52·4	51·5	60·3	71·3	68·8	79·0	79·8	78·6	78·2	67·0	58·9	52·5
1855	51·4	48·4	55·3	67·0	82·8	82·6	82·3	79·4	70·2	64·4	56·4	51·8
1856	52·5	55·5	57·1	71·6	70·6	79·2	82·9	91·4	71·6	63·9	56·0	60·6
1857	51·3	51·8	59·1	68·5	74·8	85·0	84·0	85·5	77·5	65·4	61·9	57·9
1858	53·3	51·5	66·3	73·7	80·1	86·2	76·1	82·1	79·3	65·5	55·6	53·7
1859	54·6	54·6	58·6	72·8	74·3	78·8	86·6	81·8	71·4	73·1	58·0	55·0
1860	56·0	48·9	53·9	61·0	72·0	68·4	76·6	69·7	66·2	62·5	53·5	53·1
1861	57·1	53·4	58·6	68·8	75·3	83·5	75·1	78·2	77·2	69·5	57·2	54·9
1862	53·5	55·4	60·7	72·5	73·9	72·2	74·2	75·0	70·3	68·1	56·1	56·2

In the above Table it will be seen that the Highest Maximum was 91·4 *(*1856, *August* 2*) and the Lowest Maximum was* 45·4 *(*1853, *February* 23*).*

TABLE V.

Showing the Minimum Temperature of the Air during each of the Months in the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	27·2	18·0	21·2	30·7	29·3	39·7	49·0	42·7	39·4	31·4	22·8	10·1
1854	15·0	25·0	24·5	26·0	35·3	39·3	45·5	39·4	38·0	29·7	21·0	22·9
1855	22·2	11·5	23·1	24·2	28·8	38·3	45·8	45·7	33·2	30·9	26·5	14·1
1856	21·9	23·8	24·4	30·1	29·7	39·7	42·3	43·8	34·7	30·9	24·0	18·3
1857	16·7	20·3	25·3	27·4	30·3	43·8	45·2	45·4	36·7	34·7	29·0	29·0
1858	20·7	21·1	20·9	27·0	34·7	45·6	41·3	43·3	40·7	31·5	22·8	30·9
1859	26·3	28·4	27·1	25·2	37·3	44·7	50·1	47·9	40·0	24·6	23·4	10·2
1860	26·2	23·1	21·7	26·9	36·3	41·4	42·5	47·7	35·1	31·2	31·4	7·1
1861	9·7	20·5	27·6	26·9	33·0	46·5	45·8	47·5	38·0	36·6	20·1	22·0
1862	25·7	19·4	21·5	28·4	40·4	43·7	44·4	42·1	41·2	29·4	21·7	30·3

In the above Table the Lowest Minimum is 7·1, *occurring in* 1860 *(December 29th) and the Highest Minimum is* 50·1, *occurring in* 1859 *(July 1st).*

TABLE VI.

Showing the Mean Daily Maximum Temperature of the Air for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	46·3	38·9	46·9	54·4	62·5	66·2	66·7	67·6	62·7	56·4	47·8	38·9
1854	43·7	45·9	52·0	60·6	60·6	64·3	68·9	69·5	69·1	56·2	46·7	46·9
1855	39·8	35·1	45·2	55·6	58·8	65·9	72·2	70·8	65·3	56·5	46·2	41·9
1856	44·3	47·1	47·5	56·0	58·3	67·0	70·0	71·6	63·4	57·7	48·2	46·0
1857	41·4	45·0	48·6	54·3	63·3	72·8	71·6	74·7	68·1	58·8	50·0	50·7
1858	43·8	41·2	49·3	57·1	61·9	72·8	69·4	71·3	67·6	56·9	45·1	46·2
1859	45·8	48·7	51·7	55·5	64·1	70·1	77·2	71·8	64·1	57·5	47·4	40·1
1860	44·1	41·2	47·2	51·8	64·2	62·3	68·4	64·7	61·0	56·9	44·8	40·2
1861	39·5	46·4	50·2	57·0	62·5	69·7	67·9	69·7	64·7	61·1	45·8	44·2
1862	43·6	45·3	48·4	56·4	63·4	64·2	66·5	67·7	64·6	57·4	44·4	48·4
Mean of the 10 Yrs.	43·2	43·5	48·7	55·9	62·0	67·5	69·9	69·9	65·1	57·5	46·6	44·4

In the above Table the Highest Mean Daily Maximum is 77·2 *(*1859, *July) and the Lowest* 35·1 *(*1855, *February).*

TABLE VII.

Showing the Mean Daily Minimum Temperature of the Air for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	36·8	28·5	30·9	40·4	43·0	50·4	53·9	50·2	48·2	43·9	34·9	31·0
1854	34·6	34·9	36·3	38·8	42·8	48·8	53·0	52·0	49·1	43·4	36·4	38·0
1855	33·3	25·0	32·8	36·5	41·6	48·8	56·2	53·8	48·7	45·5	37·0	33·1
1856	36·2	37·5	34·0	40·2	42·9	49·4	53·9	55·6	47·1	46·0	35·8	37·2
1857	32·9	33·3	35·7	39·1	43·5	51·4	54·9	55·9	51·3	47·5	40·8	42·4
1858	33·5	31·6	34·4	39·6	43·7	53·9	51·6	53·3	53·1	45·0	34·6	38·8
1859	37·3	37·4	41·5	38·5	45·0	51·9	58·0	54·3	49·5	45·2	37·7	30·8
1860	35·8	31·2	36·3	36·0	46·0	48·9	51·0	52·9	45·8	45·7	37·0	31·5
1861	30·4	37·5	38·1	37·2	42·6	52·4	53·6	55·1	49·1	48·8	35·2	36·2
1862	36·0	37·9	38·0	42·6	48·0	49·6	51·3	52·4	50·7	46·8	33·1	40·6
Mean of the 10 Yrs.	34·7	33·5	35·8	38·9	43·9	50·5	53·7	53·5	49·3	45·8	36·2	36·0

In the above Table the Highest Mean Daily Minimum is 58·0 *(*1859, *July) and the Lowest is* 25·0 *(*1855, *February).*

TABLE VIII.

Showing the Mean Daily Range of Temperature for each Month of the Ten Years ending 1862, that is, the difference between the Mean Daily Maximum and the Mean Daily Minimum.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	9·5	10·4	16·0	14·0	19·5	15·8	12·8	17·4	14·5	12·5	12·9	7·9
1854	9·1	11·0	15·7	21·8	17·8	15·5	15·9	17·5	20·0	12·8	10·3	8·9
1855	6·5	10·1	12·4	19·1	17·2	17·1	16·0	17·0	16·6	11·0	9·2	8·8
1856	8·1	9·6	13·5	15·8	15·4	17·6	16·1	16·0	16·3	11·7	12·4	8·8
1857	8·5	11·7	12·9	15·2	19·8	21·4	16·7	18·8	16·8	11·3	9·2	8·3
1858	10·3	9·6	14·9	17·5	18·2	18·9	17·8	18·0	14·5	11·9	10·5	7·4
1859	8·5	11·3	10·2	17·0	19·1	18·2	19·2	17·5	14·6	12·3	9·7	9·3
1860	8·3	10·0	10·9	15·8	18·2	13·4	17·4	11·8	15·2	11·2	7·8	8·7
1861	9·1	8·9	12·1	19·8	19·9	17·3	14·3	14·6	15·6	12·3	10·6	8·0
1862	7·6	7·4	10·4	13·8	15·4	14·6	15·2	15·3	13·9	10·6	11·3	7·8
Mean of the 10 Yrs.	8·5	10·0	12·9	17·0	18·1	17·0	16·1	16·4	15·8	11·8	10·4	8.4

In the above Table the greatest Mean Daily Range is 21·8 (1854, *April*) *and the least is* 6·5 (1855, *January*).

TABLES II. to VIII.—These Tables do not require explanation. It may be worthy of remark that, as shown by Table VII, there is no Month in the mean of the series of Ten Years which has a mean Minimum Temperature as low as the Freezing Point of water.

THE MEAN TEMPERATURE OF EVAPORATION.

TABLE IX. furnishes the mean Monthly Readings of the Wet-bulb Thermometer for the series of Ten Years. The hours of reading are the same as those used for the Dry-bulb Thermometer.

By means of this Table and of Table I may be obtained the Dew-point, the Elastic force of Vapour and the degree of Moisture in the Air expressed in parts of 100, that number denoting complete Saturation of the Air, which means that state of Moisture which is the greatest possible. It has not been thought desirable to add to the number of Tables in this work the results, such as the above, which may be obtained at once by a simple formula, or by Glaisher's Hygrometrical Tables; partly because such addition would make several more Tables necessary, and partly because the recent valuable balloon observations by Mr. Glaisher may, and probably will tend to improve the formulæ and Tables calculated therefrom. The reader, who desires to pursue this subject will find much useful information in the work referred to. The degree of Moisture in the several Months may be easily compared by inspection of Tables I. and IX. together, making allowance for the different value of the *differences* between the Dry and Wet-bulb Thermometers at different parts of the scale.

TABLE IX.

Showing the Mean Temperature of Evaporation for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	39·9	31·6	35·6	43·0	47·5	52·9	55·6	54·5	52·1	48·0	40·0	33·9
1854	38·2	38·1	41·0	43·9	47·0	51·5	56·2	56·1	54·2	47·2	39·2	40·4
1855	35·4	28·6	36·4	42·1	45·6	52·5	59·3	58·0	53·8	48·6	39·5	36·0
1856	38·7	40·7	37·4	43·8	46·0	54·0	57·0	58·3	52·5	49·5	39·8	40·0
1857	36·0	38·2	39·4	42·3	48·4	55·2	57·6	59·3	55·4	50·8	44·0	45·3
1858	36·8	34·2	38·8	44·2	47·7	57·2	54·3	55·9	56·5	48·3	38·0	41·1
1859	40·1	40·8	43·7	43·0	49·5	55·0	60·2	58·0	52·6	48·4	40·5	34·5
1860	38·7	33·8	39·5	40·1	49·9	51·5	54·5	54·6	49·8	48·7	39·2	35·0
1861	34·1	39·7	41·1	42·8	48·3	56·4	56·7	57·8	53·0	52·2	38·8	38·4
1862	38·4	39·4	41·3	45·2	51·2	51·5	53·3	54·9	53·7	48·9	37·2	42·6
Mean of the 10 Yrs.	37·6	36·6	39·4	43·0	48·1	53·8	56·5	56·7	53·4	49·1	39·6	38·7

In the above Table the Highest Mean Reading of the Wet-bulb Thermometer is 60·2 (1859, *July*,) *and the Lowest* 28·6 (1855, *February*.)

TABLE X.

Showing the difference between the Mean Temperature of the Air and that of Evaporation, for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	1·7	1·8	2·4	2·3	3·7	2·9	2·2	3·2	2·2	1·9	1·2	1·1
1854	0·8	1·9	2·2	4·7	2·6	2·5	2·8	3·0	3·9	1·8	1·8	1·9
1855	0·8	0·7	1·5	2·4	2·6	2·6	2·7	2·5	2·0	1·4	1·6	1·6
1856	1·3	1·0	2·2	2·2	2·3	2·2	3·0	3·5	1·5	1·5	2·1	1·5
1857	1·3	1·3	1·9	2·7	3·5	5·5	3·5	3·9	3·0	1·6	0·9	1·4
1858	1·7	1·8	2·4	2·7	3·6	4·3	4·3	4·8	2·5	1·6	1·6	1·4
1859	1·2	2·1	1·8	2·5	3·5	4·0	5·8	3·7	2·7	2·0	1·8	1·3
1860	1·2	2·3	1·3	2·4	3·5	1·5	3·6	2·3	2·3	1·8	1·3	1·0
1861	0·9	1·9	2·1	3·1	3·2	2·0	2·0	2·9	2·6	1·8	1·7	1·8
1862	1·5	1·7	1·2	2·5	2·8	3·4	3·7	3·7	2·6	2·3	1·3	2·0
Mean of the 10 Yrs.	1·2	1.7	1·9	2·6	3·1	3·1	3·4	3·3	2·5	1·8	1·5	1·5

In the above Table the greatest difference between the Mean Temperature of the Air and that of Evaporation was 5·8 (1859, *July*) *and the least was* 0·7 (1855, *February*).

THE PRESSURE OF THE ATMOSPHERE.

TABLE XI.—This Table contains the mean Monthly and Annual Readings of the Mercurial Barometer for the Ten Years 1853 to 1862, at an elevation of 228 feet above the mean level of the sea. As in the case of the observations of the Thermometer, the Readings are corrected for Diurnal Range. They are reduced to the Temperature of 32°, but not to the level of the sea. The object of the present work not being the *discussion* of the Observations, but the putting them before the reader in a form useful for such purpose, the writer imagines that his end will be best promoted by presenting the mean results, unreduced for elevation. The late (1862) interesting and useful balloon ascents, previously referred to, having thrown doubt on several former conclusions of Meteorologists, furnish another and a strong motive for offering the results referred to in the unreduced form, so far as regards elevation above the sea-level. It is desirable, however, to state that the height of the station above the mean level of the sea has been well ascertained by actual levelling, the *datum* line having been kindly furnished by Mr. Bunt, who took great pains to determine the same, in connection with an important series of levels undertaken for the British Association many years ago. Readers who wish, therefore, to reduce any or all of the results to the sea-level, may regard the 228 feet as very near the truth.

TABLE XI.

Showing the Mean Pressure of the Atmosphere at an elevation of 228 feet above the Mean Level of the Sea, the Readings being reduced to the Temperature of 32°.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
1853	29·467	29·479	29·699	29·639	29·672	29·652	29·651	29·716	29·758	29·431	29·847	29·705	29·643
1854	29·500	30·010	30·095	29·907	29·572	29·645	29·715	29·822	29·934	29·636	29·640	29·744	29·768
1855	29·945	29·512	29·458	29·874	29·601	29·769	29·668	29·775	29·898	29·424	29·796	29·653	29·698
1856	29·356	29·793	29·917	29·505	29·578	29·807	29·758	29·654	29·571	29·989	29·868	29·558	29·688
1857	29·578	29·835	29·622	29·536	29·696	29·762	29·781	29·764	29·688	29·601	29·861	30·047	29·731
1858	30·088	29·726	29·701	29·682	29·689	29·846	29·719	29·760	29·763	29·755	29·657	29·675	29·755
1859	29·948	29·734	29·742	29·533	29·723	29·704	29·863	29·739	29·627	29·429	29·720	29·528	29·691
1860	29·406	29·818	29·586	29·730	29·659	29·505	29·768	29·470	29·680	29·774	29·609	29·402	29·617
1861	29·912	29·569	29·547	29·912	29·862	29·694	29·500	29·785	29·621	29·733	29·477	29·876	29·707
1862	29·599	29·817	29·394	29·756	29·649	29·646	29·685	29·710	29·774	29·636	29·719	29·781	29·680
Mean of the 10 Yrs.	29·680	29·729	29·676	29·707	29·670	29·703	29·711	29·719	29·731	29·631	29·719	29·697	29·698

In the above Table the Highest Mean Monthly Reading was 30·095 *(*1854, *March) and the Lowest* 29·356 *(*1856, *January); the Highest Mean Annual Reading was* 29·768 *(*1854*) and the Lowest* 29·617 *(*1860*).*

TABLE XII.

This Table shows the Highest observed Reading of the Barometer during each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	30·042	29·992	30·052	30·147	29·975	29·975	30·061	30·136	30·208	29·878	30·390	30·239
1854	30·403	30·450	30·589	30·384	30·041	29·975	30·003	30·291	30·236	30·344	30·357	30·311
1855	30·408	29·858	30·301	30·311	29·900	30·192	30·115	30·125	30·296	30·011	30·137	30·076
1856	30·484	30·336	30·439	30·115	30·033	30·108	30·064	30·023	30·063	30·297	30·427	30·372
1857	30·174	30·341	30·342	30·122	30·049	30·160	30·118	30·103	30·198	30·003	30·551	30·472
1858	30·498	30·136	30·365	30·159	30·283	30·152	29·998	30·196	30·334	30·402	30·296	30·098
1859	30·588	30·476	30·259	30·039	30·053	29·958	30·129	30·123	30·146	29·952	30·495	30·503
1860	30·084	30·414	30·348	30·197	30·130	30·004	30·185	29·876	30·160	30·229	30·302	30·069
1861	30·289	30·497	30·223	30·330	30·202	29·942	29·984	30·079	29·990	30·107	30·332	30·295
1862	30·231	30·452	29·922	30·113	29·975	29·953	30·018	30·027	30·212	30·228	30·213	30·181

In the above Table the Highest Reading is 30·589 *(*1854, *March* 4*th,* 11 *a.m.) but owing to difference of Temperature, the Highest Reading when reduced to the level of the sea, occurred in* 1859, *(January* 9*th,* 11 *p.m.) when the Reading reduced to the level of the sea was* 30·854 *(i.e.* 30·588+0·266*).*

TABLE XIII.

This Table shows the Lowest observed Reading of the Barometer during each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	28·876	28·763	28·900	29·031	29·213	29·360	29·053	28·868	28·944	28·678	29·454	29·001
1854	28·457	29·306	29·593	29·189	28·899	29·269	29·359	29·464	29·536	28·849	28·782	28·876
1855	29·254	29·079	28·703	29·158	29·025	29·077	29·350	29·471	29·190	28·917	29·274	28·747
1856	28·676	29·335	29·557	28·930	29·178	29·274	29·189	28·951	28·623	29·146	29·284	28·640
1857	28·750	29·158	28·812	28·818	29·090	29·268	29·411	29·483	29·202	28·529	29·029	29·420
1858	29·691	29·283	28·772	28·876	28·865	29·564	29·310	29·411	29·265	29·092	28·714	28·923
1859	28·974	29·008	28·790	28·759	29·440	29·367	29·413	29·367	29·214	28·564	28·535	28·346
1860	28·644	28·907	28·396	28·776	29·145	28·790	29·380	29·057	29·175	29·236	29·011	28·471
1861	28·958	28·806	28·819	29·420	29·384	29·322	28·992	29·381	28·975	29·085	28·806	29·002
1862	29·050	28·994	28·928	29·259	29·230	28·861	29·151	29·001	29·384	28·713	29·143	29·232

In the above Table the Lowest Reading is 28·346 *(*1859, *December* 26, 3 *a.m.) which, reduced to the level of the sea is (*28·346+0·242*)* 28·588.

TABLES XII AND XIII.

TABLES XII and XIII give the highest and lowest observed reading of the Barometer for each month of the series of Ten Years. It is necessary to remark that as the Barometer used is not a self-registering one, there may have been one or two occasions when the true maximum or minimum escaped observation. Should such have been the case, however, the readings given are certain to be *near* the truth, even in these exceptional cases. In regard to the two *extreme* readings of the whole series of Ten Years, the interest naturally attaching itself to these led to hourly and at times still more frequent observation, so that *these* may be regarded as being absolutely true. Since on such occasions it is interesting to compare observations at different stations, the extreme readings referred to are given in both an unreduced and reduced form. In the Tables, as in Table XI, they are unreduced, but the reader will find them reduced to the sea-level in the text underneath the Tables.

TABLE XIV.—THE FALL OF RAIN.

TABLE XIV contains the total fall of Rain at a height of 6 inches above the Ground, and 192 feet above the mean level of the Sea, for each Month of the series of Ten Years. It will probably surprise some persons to find that the Month when the least amount of Rain has fallen—taking the average of the Ten Years—is February, the mean amount being 1·360 inches. Possibly an equally unexpected result is to be seen in the mean amount for October, which is the wettest month, an average of 3·526 inches having fallen in what is generally regarded as a relatively dry month.

TABLE XIV.

Showing the fall of Rain at Six inches above the surface of the Ground, and 192 feet above mean Sea-level, for each Month of the Ten Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.	Inches.
1853	2·994	0·733	0·544	3·125	2·335	4·385	4·787	4·486	3·324	3·934	2·946	0·607	34·200
1854	3·206	1·013	0·670	0·022	3·398	3·069	2·534	1·338	1·089	3·340	1·988	1·996	23·663
1855	0·311	1·462	2·166	0·429	2·188	3·628	3·490	2·789	0·849	6·060	0·541	0·992	24·905
1856	3·455	1·868	1·193	3·666	3·142	1·669	1·737	4·694	5·240	2·730	0·720	2·465	32·579
1857	2·707	1·552	1·883	2·857	2·074	2·108	2·501	3·968	2·215	3·275	1·668	1·071	27·879
1858	1·201	1·165	1·073	2·904	2·468	2·006	1·911	2·062	3·270	2·673	1·503	2·884	25·120
1859	1·995	1·654	4·747	2·955	2·390	1·929	3·938	3·950	4·185	2·224	3·045	3·861	36·873
1860	4·943	0·994	2·915	1·688	3·539	7·104	1·869	5·682	2·434	3·027	2·828	3·775	40·798
1861	1·033	2·751	2·935	0·305	1·385	3·339	4·534	2·568	3·860	2·283	4·860	1·459	31·312
1862	3·203	0·413	4·496	3·135	3·358	2·728	2·536	1·447	2·389	5·717	1·469	1·982	32·873
Mean of the 10 Yrs.	2·505	1·360	2·262	2·109	2·628	3·197	2·984	3·298	2·885	3·526	2·157	2·109	31·020

In the above Table the greatest Monthly fall of Rain is 7·104 *inches* (*June*, 1860) *and the least* 0·022 *inches April* (1854). *For the years, the greatest fall is* 40·798 *inches* (*in* 1860), *and the least* 23·663 *inches* (*in* 1854).

TABLE XV.

Showing the Mean Degree of Humidity of the Air in each Month of the Ten Years ending 1862; complete Saturation of the Air being denoted by 100.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
1853	87	81	80	83	76	82	86	80	86	87	91	89	84·0
1854	94	85	83	69	82	83	83	82	76	87	86	86	83·0
1855	93	89	87	82	82	83	84	85	87	90	86	86	86·2
1856	90	93	82	85	84	86	82	80	90	90	85	88	86·3
1857	89	90	85	80	77	69	79	78	81	89	93	90	83·3
1858	86	84	81	81	76	76	74	72	85	89	87	89	81·7
1859	91	84	87	82	77	76	69	79	83	87	86	88	82·4
1860	91	79	90	83	77	90	78	85	84	88	90	91	85·5
1861	91	86	84	79	79	87	87	82	83	87	86	86	84·7
1862	88	86	90	82	81	78	77	78	83	84	89	85	83·4
Mean of the 10 Yrs.	90·0	85·7	84·9	80·6	79·1	81·0	79·9	80·1	83·8	87·8	87·9	87·8	84·0

In the above Table the Month in which the Humidity of the Air approached the nearest to Saturation was January, 1854, when 94 was reached. There were three months when the least amount (69) is recorded; namely, 1854, April; 1857, June; and 1859, July.

For the Mean of the Ten Years the highest number is 90·0 (January), and the lowest 79·1 (May).

TABLE XV.—THE HUMIDITY OF THE AIR.

This Table shows the relative Humidity of the Air in each Month of the series of Ten Years, and also the mean monthly and mean annual Humidity. The results are obtained by means of Glaisher's Tables, 2nd edition, which are calculated from the most approved formula for the purpose. The Table here given conveys more information at a glance than any of the other results previously referred to, and deduced from the same data, would furnish; and as there are many considerations which make the degree of Humidity of the Air a very important item in the weather, it is thought desirable to place it among the other Tables. It is important to remark that an increase of Moisture in the Air does not involve an increased fall of Rain. This interesting circumstance will be at once perceived by comparing Tables XIV and XV together. A large monthly fall of Rain is consistent with a dry mean state of the Atmosphere, and *vice versâ*.

TABLE XVI.

TABLE XVI. shows the mean amount of Cloud for the series of Ten Years. An overcast sky is represented by "10" and a cloudless sky by "0," the intermediate numbers representing the relative proportions.

TABLE XVI.

This Table shows the Mean amount of Cloud during each Month of the series of Ten Years ending 1862, and also the Mean annual amounts for the same period.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
1853	6·0	6·0	5·9	6·5	4·3	6·2	7·7	6·0	5·3	6·5	6·2	7·5	6·2
1854	7·2	6·1	4·2	3·2	5·7	7·1	6·2	5·6	2·2	6·4	6·7	5·6	5·5
1855	8·1	6·4	6·8	4·7	5·8	6·3	6·0	5·4	4·8	6·3	7·5	6·0	6·2
1856	5·7	7·6	6·3	6·0	6·8	4·6	5·0	5·6	4·8	6·7	5·9	7·3	6·0
1857	6·3	6·7	6·3	6·8	6·3	4·7	5·9	4·3	5·1	6·4	7·0	6·8	6·1
1858	5·9	5·9	5·5	5·9	6·3	5·1	6·2	4·8	6·6	6·1	5·9	7·4	6·0
1859	7·2	5·3	6·5	6·0	5·5	5·4	3·5	5·1	5·9	6·1	5·4	6·4	5·7
1860	6·1	5·4	6·5	4·1	5·4	7·2	5·9	7·1	6·0	5·6	7·7	7·1	6·2
1861	6·7	6·5	4·8	3·8	5·1	7·0	6·7	5·4	4·5	6·2	4·5	5·2	5·5
1862	6·8	7·7	7·6	5·9	6·2	7·0	5·9	6·6	6·8	6·0	4·7	7·0	6·5
Mean of the 10 Yrs.	6·6	6·4	6·0	5·3	5·7	6·1	5·9	5·6	5·2	6·2	6·1	6·6	6·0

In the above Table the Largest Mean Monthly amount of Cloud is 8·1, *occurring in* 1855, *January; and the Smallest amount is* 2·2, *occurring in* 1854, *September.*

TABLE XVII.

Showing the Mean Daily, Monthly, and Annual amount of Ozone for each of the Seven Years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Years
1856	4·3	3·4	5·0	7·8	9·6	9·4	7·2	5·0	7·0	2·1	6·0	6·4	6·1
1857	8·0	2·6	6·8	5·4	6·3	6·3	8·3	5·5	4·1	4·1	1·3	2·6	5·1
1858	3·6	2·8	8·4	7·1	9·6	6·9	8·0	5·6	4·2	4·3	1·1	2·8	5·4
1859	3·8	4·4	7·0	4·8	5·1	5·8	6·1	4·3	3·9	1·4	1·7	1·4	4·1
1860	2·4	4·7	7·0	4·9	6·6	6·9	4·5	6·1	2·5	3·4	0·6	0·3	4·2
1861	1·6	1·8	6·3	2·0	3·3	4·0	3·1	3·7	3·2	0·6	2·5	2·9	2·9
1862	3·8	3·1	3·5	4·2	7·1	7·8	5·9	5·4	6·4	5·0	0·9	4·5	4·8
Mean of 7 Years.	3·9	3·3	6·3	5·2	6·8	6·7	6·2	5·1	4·5	3·0	2·0	3·0	4·7

In the above Table the Highest number is 9·6, *which occurs twice* (*in* 1856 *and* 1858) *on both occasions in the same Month* (*May*), *which Month has also the Highest Mean Result for the Seven Years during which Ozone Observations have been taken. The Smallest Monthly amount is* 0·3, *which is recorded for December,* 1860. *For the Mean of the Seven Years the Highest number is* 6·8 (*in May*), *and the Lowest* 2·0 (*in November*).

TABLE XVII.—OZONE.

TABLE XVII contains the Mean Daily, Monthly, and Annual amount of Ozone during the *Seven* Years ending 1862. The Ozone Papers used are those of Schönbein, and the mode of Observation has been to expose the Slips of Paper freely to the Air, but to protect them from Rain and Sunshine. They are placed in the hollow part of the Thermometer Stand, and at a height of about four feet six inches from the surface of the ground (above grass). In the Year 1853, but few observers of Ozone had commenced work in this department of Meteorology. The results at our own station are for a period Three Years less than that wherein the other Observations were made. There are several interesting facts concerning this mysterious agent, which our own Observations have, in some instances, brought very clearly to light. Our Westerly and W.S.W. Winds bring a very large quantity of Ozone to us — much larger than any other Winds bring—but whether this is owing chiefly to proximity to the Bristol Channel, or to other causes, is not yet certainly known.

TABLE XVIII.

Direction of Wind.

N.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	1·0	3·5	1·5	1·0	2·0	0·5	0·5	3·5	1·0	2·0	1·0	2·5
1854	0·0	2·0	0·0	2·0	2·0	0·5	0·5	5·0	0·0	2·5	1·5	2·0
1855	0·5	0·0	0·5	1·0	4·0	4·0	2·0	1·5	1·5	1·5	2·5	2·5
1856	0·5	0·5	2·0	1·0	2·5	2·5	0·5	1·0	2·5	0·5	4·0	3·0
1857	4·0	1·0	0·5	2·0	0·0	0·0	0·0	2·0	0·5	1·0	1·0	0·0
1858	2·0	0·5	0·0	1·0	3·0	1·0	2·0	2·5	0·0	2·0	2·0	1·5
1859	3·5	1·0	3 0	1·0	1·5	1·5	2·5	0·5	1·0	1·0	2·0	1·5
1860	1·5	3·5	1·0	1·5	0·0	2·0	0·5	0·0	4·0	0·5	0·0	1·5
1861	0·5	1·0	2·0	1·0	4·5	1·0	0·0	0·0	0·0	1·5	0·0	0·0
1862	0·0	0·0	0·5	0·5	0·5	1·0	0·5	1·0	1·5	0·5	4·0	0·0
Mean of the 10 Yrs.	1·4	1·3	1·1	1·2	2·0	1·4	0·9	1·7	1·2	1·3	1·8	1·5

TABLE XIX.

Direction of Wind.

N.N.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·0	1·0	0·5	1·0	2·0	0·0	0·5	0·5	0·0	0·0	2·0
1854	1·5	1·0	1·0	1·0	0·5	1·0	1·0	0·5	0·5	1·0	0·5	0·0
1855	0·5	1·0	1·0	2·0	0·0	1·0	0·5	0·0	0·5	1·0	2·5	0·5
1856	0·0	0·0	2·0	0·5	2·5	0·0	0·0	3·0	0·0	1·5	0·0	2·0
1857	2·0	0·0	1·0	0·0	0·0	0·0	0·0	2·0	0·0	0·0	0·0	0·0
1858	0·0	0·0	0·0	0·5	0·0	1·0	0·5	0·0	0·0	1·5	1·5	0·5
1859	1·0	0·0	0·0	0·0	2·0	0·5	2·0	0·0	0·0	0·0	0·5	0·0
1860	0·0	2·0	0·0	2·5	0·0	0·0	0·5	0·0	2·0	0·0	0·0	0·0
1861	0·0	1·0	0·0	0·0	0·5	0·0	0·0	0·0	0·5	0·0	0·0	0·5
1862	0·0	0·0	1·0	0·0	0·0	0·0	0·0	2·0	0·0	0·0	0·0	0·5
Mean of the 10 Yrs.	0·5	0·5	0·7	0·7	0·6	0·6	0·4	0·8	0·4	0·5	0·5	0·6

TABLE XX.

Direction of Wind.

N.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	5·5	13·0	7·5	2·0	6·0	3·5	0·0	4·0	5·5	2·0	5·0	8·0
1854	1·5	1·5	3·0	10·5	2·0	2·5	1·0	1·0	4·5	1·5	4·0	0·0
1855	6·5	8·5	5·5	7·0	5·5	0·0	0·5	0·5	6·0	0·5	4·0	3·5
1856	4·0	0·5	4·0	5·5	5·0	1·0	1·0	3·0	2·5	3·5	2·0	1·0
1857	3·5	1·0	1·5	3·0	3·5	2·5	0·5	2·0	1·0	4·5	4·0	0·0
1858	0·5	3·5	2·0	4·0	2·5	2·0	3·5	2·0	3·0	7·0	4·0	0·5
1859	2·5	0·0	0·0	2·5	4·0	5·0	1·5	0·0	3·0	0·5	2·0	3·5
1860	0·5	6·0	3·5	7·0	2·5	0·5	3·0	0·0	4·0	1·5	8·0	6·0
1861	4·0	3·5	0·0	6·0	5·0	3·0	0·0	0·0	1·5	4·5	1·0	5·0
1862	1·0	1·0	4·0	7·0	3·5	1·0	0·5	2·0	5·0	1·0	3·0	0·0
Mean of the 10 Yrs.	2·9	3·9	3·1	5·5	3·9	2·1	1·2	1·4	3·6	2·7	3·7	2·8

TABLE XXI.

Direction of Wind.

E.N.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·0	2·0	0·0	3·0	1·0	0·5	4·0	2·5	2·5	1·5	3·5
1854	0·0	0·5	2·5	1·5	0·0	5·5	1·5	0·0	1·5	1·5	2·0	0·0
1855	4·5	6·0	3·0	1·5	1·0	1·0	0·0	0·0	4·0	1·0	4·5	0·0
1856	0·5	3·5	8·0	3·0	1·0	0·0	0·5	0·0	1·0	3·0	0·0	0·5
1857	0·5	0·5	0·0	0·5	6·5	1·0	0·5	1·0	1·5	1·0	3·0	0·5
1858	1·0	8·5	4·0	2·0	3·5	1·0	0·5	2·5	2·0	1·5	5·5	0·0
1859	1·0	0·0	0·0	2·5	11·5	1·5	1·0	1·5	0·0	1·5	0·5	1·0
1860	0·5	1·0	0·0	1·5	2·5	0·0	2·0	0·0	1·5	1·5	7·5	2·0
1861	3·5	0·5	0·5	4·0	3·0	4·0	0·0	0·0	0·0	2·0	0·0	6·5
1862	1·5	8·0	3·5	0·5	1·0	0·0	0·0	1·0	3·5	1·5	0·5	0·0
Mean of the 10 Yrs.	1·3	2·9	2·3	1·7	3·3	1·5	0·7	1·0	1·7	1·7	2·5	1·4

TABLE XXII.

Direction of Wind.

E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·5	0·0	2·5	1·5	6·0	1·0	0·0	0·0	0·0	2·0	2·5	2·0
1854	2·0	2·0	1·0	0·5	0·0	0·0	2·5	0·0	1·5	0·5	1·5	0·0
1855	0·5	3·5	0·0	1·0	2·0	0·5	0·0	0·5	3·0	0·0	3·0	1·0
1856	3·0	1·0	7·0	0·5	1·0	0·0	0·0	2·0	0·5	1·0	2·5	1·0
1857	2·0	1·5	4·0	1·0	3·5	4·5	0·0	4·0	1·0	2·5	10·0	0·0
1858	1·5	3·5	1·5	2·5	1·0	0·0	1·0	2·0	1·0	1·0	6·5	0·0
1859	0·0	0·0	0·0	2·5	4·5	2·0	2·5	0·5	1·0	6·5	2·0	1·0
1860	1·5	0·0	0·0	1·5	1·0	1·0	1·5	0·5	1·0	1·0	4·0	1·5
1861	1·0	0·5	0·0	2·0	0·5	1·5	0·5	0·0	0·5	2·0	0·0	0·5
1862	0·5	3·0	1·0	0·5	1·0	0·0	0·0.	2·0	3·0	1·5	2·0	0·5
Mean of the 10 Yrs.	1·2	1·5	1·7	1·4	2·0	1·1	0·8	1·1	1·3	1·8	3·4	0·7

TABLE XXIII.

Direction of Wind.

E.S.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·5	0·5	0·0	0·0	0·0	0·0	0·5	0·5	0·0	1·5	0·5
1854	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·0	0·5	0·0	0·0	0·0
1855	0·5	0·0	0·0	0·0	1·5	0·5	0·0	0·5	1·0	0·0	0·0	1·5
1856	0·0	1·5	0·0	0·5	0·5	0·0	0·0	1·0	0·5	0·5	0·0	0·0
1857	0·0	0·0	1·0	0·0	1·0	0·5	0·0	2·0	0·5	1·0	2·0	0·0
1858	1·5	2·0	0·5	2·0	0·5	0·0	0·0	2·0	1·0	0·0	2·5	3·0
1859	0·0	0·0	0·0	0·0	0·0	0·5	0·5	0·0	0·0	0·5	0·5	0·0
1860	0·0	0·0	0·0	0·5	0·0	0·0	0·0	0·0	0·5	0·0	0·5	0·0
1861	0·0	0·0	0·0	1·0	0·0	0·0	0·0	0·0	0·5	2·0	0·0	0·0
1862	0·0	0·0	0·0	1·0	0·0	0·0	0·0	0·0	1·0	0·0	0·0	0·0
Mean of the 10 Yrs.	0·2	0·4	0·2	0·5	0·3	0·2	0·1	0·6	0·6	0·4	0·7	0·5

TABLE XXIV.

Direction of Wind.

S.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	1·0	2·0	0·5	0·0	2·0	0·5	1·5	0·5	1·5	2·0	1·0	2·5
1854	3·5	0·0	1·5	2·0	1·0	1·0	1·0	0·0	5·0	0·0	1·0	0·0
1855	0·0	1·0	2·5	0·5	0·0	0·5	1·0	1·5	1·5	0·0	2·5	2·0
1856	3·0	1·0	1·5	0·5	1·0	0·0	0·5	2·0	2·5	2·0	0·5	1·0
1857	1·0	4·0	4·0	3·0	1·5	5·0	0·5	1·0	4·0	4·0	2·5	5·0
1858	5·5	4·5	3·0	5·5	0·5	2·5	0·5	1·0	3·0	0·0	0·0	3·0
1859	0·5	0·5	0·0	2·5	1·5	1·5	0·0	1·5	0·5	4·0	7·5	3·0
1860	5·5	0·5	1·0	2·5	2·0	3·5	0·5	1·0	1·5	2·5	1·5	6·5
1861	5·5	3·5	1·5	5·0	0·5	1·0	4·0	2·0	1·5	4·5	1·0	3·0
1862	5·0	1·5	4·5	0·0	2·5	2·0	0·5	0·0	1·0	3·5	4·5	3·0
Mean of the 10 Yrs.	3·0	1·9	2·0	2·2	1·3	1·7	1·0	1·1	2·2	2·2	2·2	2·9

TABLE XXV.

Direction of Wind.

S.S.E.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·0	0·5	0·0	1·5	0·0	0·0	0·0	0·5	2·0	2·0	1·5
1854	0·5	0·5	0·0	1·0	0·5	0·0	1·0	0·0	0·5	0·5	0·0	0·0
1855	0·5	0·5	2·0	0·5	1·5	0·0	2·0	0·0	0·0	0·5	0·0	0·5
1856	2·5	0·5	1·5	3·0	1·0	0·0	0·5	0·0	0·5	2·0	0·0	0·5
1857	0·0	1·5	2·0	3·0	1·0	1·5	0·0	1·0	3·0	1·0	0·5	1·5
1858	1·5	1·0	0·0	0·5	0·0	0·0	1·0	0·0	1·0	0·5	1·0	4·0
1859	0·0	1·5	0·5	0·5	0·5	0·5	0·5	0·0	1·0	2·0	2·5	1·0
1860	2·0	0·5	1·5	0·5	2·0	0·5	0·0	0·5	1·5	1·0	1·5	1·5
1861	3·5	2·5	1·5	0·5	0·0	1·5	2·0	0·5	3·0	2·0	1·0	1·5
1862	3·0	2·0	1·5	1·5	1·5	1·5	0·5	0·0	0·0	0·5	0·5	1·5
Mean of the 10 Yrs.	1·4	1·0	1·1	1·1	1·0	0·5	0·8	0·2	1·1	1·2	0·9	1·4

TABLE XXVI.

Direction of Wind.

S.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	2·5	2·5	1·5	1·0	0·0	0·5	3·0	2·0	1·0	3·5	3·0	0·0
1854	4·0	0·0	3·0	0·5	1·5	0·5	3·0	0·0	1·0	2·0	0·5	0·0
1855	0·0	1·0	0·5	1·0	2·0	3·0	1·0	2·0	0·5	1·5	0·0	2·0
1856	2·0	0·0	0·0	2·5	1·0	1·0	2·0	2·0	1·0	4·0	0·0	2·0
1857	0·0	1·5	2·5	1·0	4·5	2·0	1·0	1·0	2·0	3·0	2·0	5·0
1858	3·0	0·0	1·0	2·0	2·0	0·5	1·5	1·0	1·5	1·0	1·5	3·0
1859	2·0	4·0	1·5	1·5	1·5	0·5	0·5	0·0	3·0	1·0	0·0	1·0
1860	1·0	1·0	0·0	0·0	0·5	1·5	1·0	1·5	0·5	1·0	0·5	1·0
1861	2·0	3·0	1·5	1·0	0·0	1·5	1·0	1·0	1·0	3·0	2·0	2·5
1862	1·0	1·0	1·0	2·0	0·5	0·5	2·0	2·5	1·0	0·5	2·5	2·0
Mean of the 10 Yrs.	1·7	1·4	1·3	1·2	1·4	1·2	1·6	1·3	1·3	2·0	1·2	1·9

TABLE XXVII.

Direction of Wind.

S.S.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·0	0·5	0·5	0·0	1·5	1·5	0·0	1·0	2·0	0·0	0·0
1854	3·0	0·0	0·0	0·0	1·0	0·0	0·5	0·5	0·5	1·0	1·0	0·0
1855	0·0	0·0	1·0	0·0	0·5	0·5	1·0	2·0	0·5	1·0	0·0	1·0
1856	0·0	0·5	0·0	1·0	0·5	0·5	1·0	1·0	0·0	2·0	0·0	2·5
1857	0·5	1·5	0·0	1·0	1·0	1·5	1·5	0·0	3·5	2·0	0·0	1·5
1858	0·0	0·5	0·5	0·0	2·0	1·0	0·0	1·5	0·5	2·5	1·0	1·0
1859	4·5	3·5	0·5	0·5	0·0	0·5	1.0	0·5	1·0	0·0	0·0	0·5
1860	1·5	0·0	1·0	0·0	2·0	0·5	0·0	1·0	1·0	0·0	0·0	0·0
1861	1·5	1·0	0·5	0·0	0·0	0·5	0·5	0·5	0·5	0·0	0·5	0·5
1862	0·5	0·5	0·5	1·0	0·0	1·0	0·0	0·0	1·5	1·0	0·0	0·5
Mean of the 10 Yrs.	1·2	0·7	0·5	0·4	0·7	0·8	0·7	0·7	1·0	1·1	0·3	0·8

TABLE XXVIII.

Direction of Wind.

S.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	9·5	0·0	5·0	6·5	1·5	7·5	3·0	1·0	2·5	3·0	2·0	0·0
1854	2·5	1·0	1·0	0·5	7·0	7·5	4·5	6·0	2·0	2·0	1·0	1·0
1855	0·5	0·0	1·0	0·0	1·5	5·5	5·5	3·5	1·5	3·0	3·5	2·0
1856	3·0	6·0	0·0	3·0	3·0	3·0	2·5	6·0	2·5	2·0	0·0	3·5
1857	3·0	5·5	1·0	5·0	3·5	1·5	4·0	3·0	1·0	1·5	0·0	8·0
1858	2·5	2·0	1·0	0·5	6·0	0·5	2·0	3·0	8·0	4·0	0·5	1·5
1859	2·0	4·0	2·5	2·5	0·0	0·5	2·0	3·0	4·0	3·0	0·0	4·5
1860	3·5	2·0	3·0	1·0	3·0	6·0	3·0	4·5	3·0	1·5	1·0	0·0
1861	2·0	4·5	2·5	0·0	0·5	3·0	5·5	6·0	4·5	1·0	4·5	3·0
1862	2·0	1·0	3·5	3·5	4·0	1·0	4·0	3·0	4·0	6·0	1·5	6·5
Mean of the 10 Yrs.	3·0	2·6	2·1	2·2	3·0	3·6	3·6	3·9	3·3	2·7	1·4	3·0

TABLE XXIX.

Direction of Wind.

W.S.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·0	0·5	3·0	0·0	3·5	8·5	4·5	6·0	1·0	2·0	0·0
1854	2·5	1·5	7·0	0·5	7·5	5·0	7·0	3·0	4·5	1·0	1·5	3·5
1855	2·0	1·0	1·0	2·0	0·5	2·5	5·5	5·0	2·5	6·5	1·5	2·5
1856	3·5	3·0	0·0	2·0	6·0	5·0	9·0	4·0	2·0	1·0	0·0	3·0
1857	2·0	1·5	4·0	2·0	1·5	3·5	6·5	4·0	3·5	2·0	1·0	3·0
1858	2·5	0·0	1·5	1·5	1·0	3·5	2·0	1·0	1·0	1·5	0·5	4·5
1859	4·0	3·0	6·0	2·0	0·0	1·0	2·5	5·0	3·0	1·5	5·5	2·0
1860	3·5	1·5	7·0	0·5	2·5	6·0	1·0	5·5	2·5	4·0	0·0	0·0
1861	1·0	1·5	4·5	0·5	1·0	1·5	6·0	5·5	2·0	0·5	5·5	0·5
1862	5·0	1·5	0·5	3·0	3·0	1·5	5·5	2·5	2·5	3·0	0·0	2·5
Mean of the 10 Yrs.	2·6	1·5	3·2	1·7	2·3	3·3	5·3	4·0	2·9	2·2	1·8	2·2

TABLE XXX.

Direction of Wind.

W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	7·5	0·0	1·0	2·5	1·5	5·0	8·0	7·0	3·0	2·0	1·0	0·0
1854	4·0	8·5	2·5	2·5	2·5	3·0	2·5	6·0	2·0	7·0	0·5	9·5
1855	4·0	0·5	3·5	3·5	3·0	2·5	4·0	5·0	3·5	5·5	0·0	2·0
1856	1·0	2·5	0·5	2·0	3·5	8·5	4·5	3·0	3·5	3·0	1·0	3·0
1857	4·5	5·0	4·5	3·0	3·0	3·0	8·0	3·0	3·0	5·0	1·0	2·0
1858	3·5	0·5	5·5	2·5	5·5	5·0	3·5	2·5	3·5	3·0	1·0	2·0
1859	4·0	4·0	7·0	6·0	0·0	4·0	6·0	8·5	4·5	2·0	1·5	2·0
1860	4·5	4·0	4·0	2·5	7·0	5·5	3·0	7·5	1·5	6·0	3·0	2·0
1861	2·0	2·0	5·5	0·5	3·5	2·0	6·0	6·0	7·5	3·0	4·0	1·0
1862	2·0	3·0	3·5	4·0	8·5	8·5	11·5	5·0	2·5	8·0	2·0	7·0
Mean of the 10 Yrs.	3·7	3·0	3·7	2·9	3·8	4·7	5·7	5·4	3·4	4·5	1·5	3·1

TABLE XXXI.

Direction of Wind.

W.N.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	0·5	0·0	0·0	1·0	0·0	1·5	0·0	1·5	2·5	0·0	0·0
1854	1·5	0·5	0·5	1·0	1·0	2·5	1·0	2·5	1·5	1·5	2·0	3·0
1855	0·0	0·0	0·5	0·0	1·5	2·0	1·5	0·5	0·0	0·5	0·0	0·0
1856	0·0	0·0	0·0	1·0	0·0	1·0	2·0	1·0	1·0	1·0	3·5	2·5
1857	1·5	0·5	2·0	1·0	0·0	1·5	3·0	0·0	1·5	1·0	0·0	1·0
1858	2·5	0·5	2·0	2·0	1·0	5·0	3·5	4·0	2·0	3·5	0·5	3·0
1859	2·5	2·5	1·5	2·0	0·0	1·5	4·0	3·5	3·0	3·0	1·5	0·5
1860	0·5	1·5	4·5	2·0	1·5	1·0	2·0	3·5	0·5	4·0	0.0	1·0
1861	0·5	1·0	5·5	3·0	2·0	0·5	2·5	3·5	1·5	0·5	2·0	3·5
1862	1·5	0·0	1·0	1·5	2·0	4·5	4·5	2·5	0·5	1·0	0·5	1·0
Mean of the 10 Yrs	1·1	0·7	1·8	1·3	1·0	1·9	2·6	2·1	1·3	1·9	1·0	1·5

TABLE XXXII.

Direction of Wind.

N.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	3·0	3·0	3·0	5·5	2·0	0·5	3·0	2·0	2·0	3·0	1·5	2·5
1854	1·0	3·0	2·0	2·0	1·5	0·5	2·5	3·0	1·5	5·5	8·0	6·5
1855	2·5	0·5	2·0	4·0	2·5	0·5	3·5	4·0	1·0	1·5	0·5	2·5
1856	2·5	0·5	1·0	2·0	0·5	5·0	4·0	1·0	6·0	1·0	8·0	3·5
1857	2·5	1·5	2·5	3·5	0·0	2·0	4·5	4·0	3·0	1·5	2·5	3·0
1858	2·5	1·0	7·0	3·0	0·5	5·5	6·5	5·0	2·0	2·0	1·5	3·0
1859	2·5	3·5	6·0	2·5	1·5	3·5	3·0	2·5	3·5	3·0	2·0	0·5
1860	1·5	2·5	4·0	2·0	2·5	2·0	6·0	3·5	3·0	4·0	2·0	6·0
1861	1·5	0·5	4·5	4·0	9·0	5·0	2·0	6·0	2·5	0·5	3·5	2·0
1862	5·0	2·0	2·0	1·5	2·0	5·5	1·5	5·5	2·0	2·5	4·5	5·0
Mean of the 10 Yrs.	2·4	1·8	3·4	3·0	2·2	3·0	3·7	3·6	2·7	2·4	3·4	3·5

TABLE XXXIII.

Direction of Wind.

N.N.W.

Years	January	February	March	April	May	June	July	August	September	October	November	December
1853	0·0	1·5	1·0	5·0	0·5	3·0	0·0	1·5	0·5	0·0	1·5	1·0
1854	0·0	5·0	3·0	2·0	0·5	0·5	1·5	2·5	1·5	1·0	3·5	5·0
1855	0·0	0·0	1·5	1·0	2·5	2·5	0·5	3·0	1·5	2·0	1·0	2·5
1856	0·0	1·0	0·5	0·0	0·5	0·5	2·5	0·0	2·5	0·0	4·5	1·0
1857	3·5	0·0	0·0	1·0	0·0	0·0	1·0	1·0	1·0	0·0	0·5	0·5
1858	1·0	0·0	1·5	0·5	2·0	1·5	3·0	1·0	0·5	0·0	0·5	0·5
1859	1·0	0·5	2·5	1·5	0·5	2·0	0·5	0·0	0·5	0·0	1·5	4·0
1860	2·0	1·5	0·0	2·0	0·0	0·0	5·5	2·0	1·5	1·0	0·0	1·0
1861	0·5	0·0	0·5	1·0	0·0	3·0	1·0	0·0	1·5	0·0	1·0	0·0
1862	1·0	0·5	0·0	1·0	0·5	0·5	0·0	1·0	0·5	0·5	0·5	1·0
Mean of the 10 Yrs.	0·9	1·0	1·0	1·5	0·7	1·4	1·6	1·2	1·2	0·4	1·5	1·6

TABLE XXXIV.

Direction of Wind.

Mean number of Days in each Month for the Ten Years ending 1862, when the Wind was in the direction denoted by the letter at the beginning of the line.

	January	February	March	April	May	June	July	August	September	October	November	December	Totals
N.	1·4	1·3	1·1	1·2	2·0	1·4	0·9	1·7	1·2	1·3	1·8	1·5	16·8
N.N.E.	0·5	0·5	0·7	0·7	0·6	0·6	0·4	0·8	0·4	0·5	0·5	0·6	6·8
N.E.	2·9	3·9	3·1	5·5	3·9	2·1	1·2	1·4	3·6	2·7	3·7	2·8	36·8
E.N.E.	1·3	2·9	2·3	1·7	3·3	1·5	0·7	1·0	1·7	1·7	2·5	1·4	22·0
E.	1·2	1·5	1·7	1·4	2·0	1·1	0·8	1·1	1·3	1·8	3·4	0·7	18·0
E.S.E.	0·2	0·4	0·2	0·5	0·3	0·2	0·1	0·6	0·6	0·4	0·7	0·5	4·7
S.E.	3·0	1·9	2·0	2·2	1·3	1·7	1·0	1·1	2·2	2·2	2·2	2·9	23·7
S.S.E.	1·4	1·0	1·1	1·1	1·0	0·5	0·8	0·2	1·1	1·2	0·9	1·4	11·7
S.	1·7	1·4	1·3	1·2	1·4	1·2	1·6	1·3	1·3	2·0	1·2	1·9	17·5
S.S.W.	1·2	0·7	0·5	0·4	0·7	0·8	0·7	0·7	1·0	1·1	0·3	0·8	8·9
S.W.	3·0	2·6	2·1	2·2	3·0	3·6	3·6	3·9	3·3	2·7	1·4	3·0	34·4
W.S.W.	2·6	1·5	3·2	1·7	2·3	3·3	5·3	4·0	2·9	2·2	1·8	2·2	33·0
W.	3·7	3·0	3·7	2·9	3·8	4·7	5·7	5·4	3·4	4·5	1·5	3·1	45·4
W.N.W.	1·1	0·7	1·8	1·3	1·0	1·9	2·6	2·1	1·3	1·9	1·0	1·5	18·2
N.W.	2·4	1·8	3·4	3·0	2·2	3·0	3·7	3·6	2·7	2·4	3·4	3·5	35·1
N.N.W.	0·9	1·0	1·0	1·5	0·7	1·4	1·6	1·2	1·2	0·4	1·5	1·6	14·0

TABLE XXXV.

Showing the Mean force of the Wind in proportional parts of "6," that number denoting the strongest Wind recorded, and "0" denoting a calm, for each month of the ten years ending 1862.

Years	January	February	March	April	May	June	July	August	September	October	November	December	Year
1853	1·2	1·1	0·9	1·1	1·2	1·3	1·2	1·4	1·0	0·8	0·3	0·6	1·0
1854	0·9	1·1	0·8	1·1	1·0	1·1	0·7	1·0	0·7	0·6	0·6	1·0	0·9
1855	0·4	0·5	0·9	0·8	1·0	0·9	0·7	1·2	0·5	0·9	0·4	0·7	0·7
1856	0·4	0·7	0·6	0·9	1·2	1·1	1·2	1·2	0·9	0·5	0·7	0·8	0·8
1857	1·0	0·7	1·2	1·0	0·8	0·9	1·2	0·9	0·6	0·7	0·4	0·7	0·8
1858	0·8	0·9	0·9	0·6	1·0	0·5	0·7	0·7	0·7	0·7	0·6	0·8	0·7
1859	0·7	0·9	1·0	0·6	0·4	0·5	0·5	0·5	0·7	0·3	0·4	0·5	0·6
1860	0·7	0·7	0·7	0·5	0·5	0·6	0·2	0·7	0·4	0·4	0·2	0·3	0·5
1861	0·3	0·5	0·9	0·2	0·3	0·4	0·5	0·6	0·5	0·2	0·3	0·4	0·4
1862	0·4	0·3	0·3	0·4	0·3	0·4	0·3	0·3	0·4	0·3	0·1	0·4	0·3
Mean of the 10 Yrs	0·7	0·7	0·8	0·7	0·8	0·8	0·7	0·8	0·6	0·5	0·4	0·6	0·7

THE DIRECTION AND FORCE OF WINDS.

TABLES XVIII TO XXXIII.

These Tables require little explanation. They show the number of days in each month when the Wind was in the direction indicated. From these Tables it appears, that the relative frequency of the Winds (using sixteen "points" * as sufficiently exact) is as follows :—W. 45 ; N.E. 37 ; N.W. 35 ; S.W. 34 ; W.S.W. 33 ; S.E. 24 ; E.N.E. 22 ; W.N.W. 18 ; E. 18 ; S. 18 ; N. 17 ; N.N.W. 14 ; S.S.E. 12 ; S.S.W. 9 ; N.N.E. 7 ; E.S.E. 5 ; Calm, 17.

Table XXXIV contains the Mean results of the previous Tables in a synoptical view.

Table XXXV shows the Mean monthly and annual force of the Wind, estimated by the scale 0 to 6. It is found that by adopting this scale and squaring the numbers, the number of pounds pressure on the square foot is approximately known. Till anemometers are much improved, this method may be regarded as a decidedly useful one, but meteorologists look forward to a good anemometer as an instrument *to be* invented.

* It is hardly necessary to say, that the "points" used are the true bearings, and have no reference whatever to the magnetic poles.

NOTE.

The Observations upon which the results in the preceding pages, printed in the form of Tables, are founded, have been taken with great care, and the Tables have been checked in various ways, so that it is hoped they are free from error. All the instruments, by means of which the observations have been taken, have been verified at the Royal Observatory, Greenwich, and a system of observation has been adopted which of necessity greatly increases the value of the registration of such data. I have, therefore, no hesitation in offering to the public the Results of the last Ten Years' Observations. About seven-tenths of the observations have been taken by myself. For the remaining three-tenths I am chiefly indebted to my brother, George Forster Burder, M.D. The opportunity of thus referring to the kind help so readily afforded, is gladly seized for the following reasons among others. Ill health, at intervals during the series of years, would have caused so many blanks in the Tables that it would not have been thought worth while to publish the results but for the aid thus afforded me. During two entire years (1857 *and* 1858) *the observations were taken wholly by my brother, owing to my illness. Other minor intervals have been supplied by him. Fortunately for the series of ten years' work, my brother takes as much interest as I do in the subject, and thus the set of observations is as complete as if it had been the work of either of us alone. It seems desirable to allude to this circumstance because where blanks are supplied in such like cases by a proxy who is* not *interested in the work, it is vain to expect that the gaps will be filled with the same amount of care as would be bestowed on them by an observer who works* con amore.

WILLIAM CORBETT BURDER.

7, *South Parade, Clifton, Bristol,*
April, 1863.

PRINTED BY H. J. MILLS, "GAZETTE OFFICE," NICHOLAS STREET, BRISTOL.